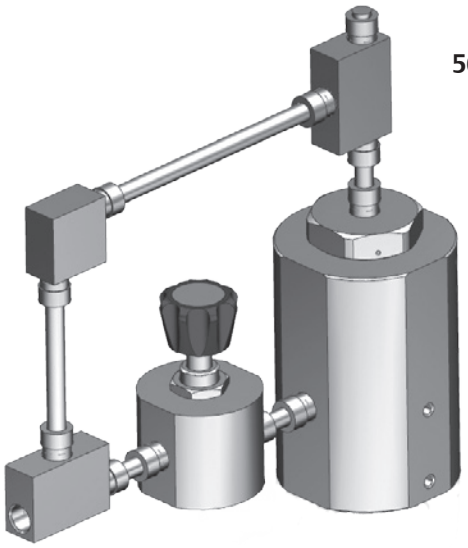
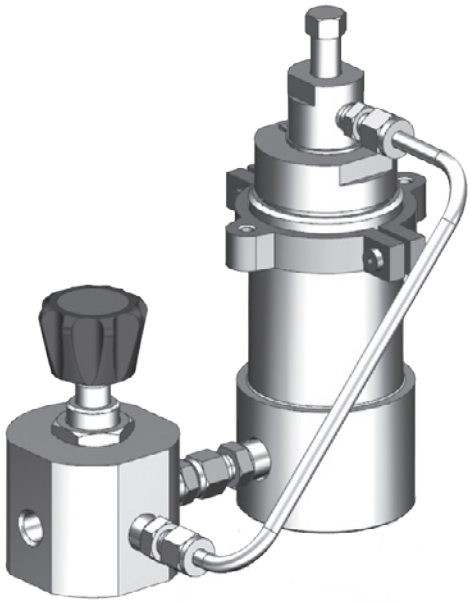
Operations and Service Manual
DOPSM2097X012
October 2015

56-21XX and 56-22XX Series

TESCOM Product Manual



56-2100 SERIES



56-2200 SERIES

Do not attempt to select, install, use or maintain this product until you have read and fully understood this manual.

This manual is available in multiple languages online at www.tescom.com.

TESCOM™

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Process Management

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Section 1: Symbols

1.1 Symbols

⚠ CAUTION

Paragraphs highlighted by the **CAUTION** icon contain information that must be followed to maintain a safe and successful operating environment.

⚠ WARNING

Paragraphs highlighted by the **WARNING** icon contain information about practices or circumstances that can lead to personal injury or death, property damage or economic loss.

Section 2: Safety, Installation and Operations Precautions

2.1 Regulators and Valves

⚠ WARNING



Do not attempt to select, install, use or maintain this regulator, valve or accessory until you have read and fully understand these instructions.

Be sure this information reaches the operator and stays with the product after installation.

Do not permit untrained personnel to install, use or maintain this regulator, valve or accessory.

Improper selection, improper installation, improper maintenance, misuse or abuse of regulators, valves or related accessories can cause death, serious injury and/or property damage.

Oxygen service requires special expertise and knowledge of system design and material compatibility in order to minimize the potential for death, serious injury and/or property damage.

Possible consequences include but are not limited to:

- **High velocity fluid (gas or liquid) discharge**
- **Parts ejected at high speed**
- **Contact with fluids that may be hot, cold, toxic or otherwise injurious**
- **Explosion or burning of the fluid**
- **Lines/hoses whipping dangerously**
- **Damage or destruction to other components or equipment in the system.**

⚠ CAUTION

Safety Precautions

1. Inspect the regulators, valves, accessories and assembly before each use.
2. Never connect regulators, valves, accessories and assembly to a supply source having a pressure greater than the maximum rated pressure of the regulator, valve or accessory.
3. Refer to product label (model specific) for maximum inlet pressures. If this rated pressure cannot be found, contact your local TESCOM representative for the rated pressure prior to installation and use. Verify the designed pressure rating of all equipment (e.g., supply lines, fittings, connections, filters, valves, gauges, etc.) in your system. All must be capable of handling the supply and operating pressure.
4. Clearly establish flow direction of the fluid before installation of regulators, valves and accessories. It is the responsibility of the user to install the equipment in the correct direction.
5. Remove pressure from the system before tightening fittings, gauges or components.
6. Never turn regulator or valve body. Instead hold regulator or valve body and turn fitting nut.
7. If a regulator or valve leaks or malfunctions, take it out of service immediately.
8. Do not modify equipment or add attachments not approved by the manufacturer.
9. Apply pressure to the system gradually, avoiding a sudden surge of fluid or pressure shock to the equipment in the system.
10. Regulators are not shut-off devices. Install a pressure relief device downstream of the regulator to protect the process equipment from overpressure conditions. Shut off the supply pressure when the regulator is not in use.
11. Periodic inspection and scheduled maintenance of your equipment is required for continued safe operation.
12. The frequency of servicing is the responsibility of the user based on the application. Positive seal/tied diaphragm regulators require the downstream pressure vented before turning the hand knob counterclockwise to reduce the outlet pressure. Damage may occur to the regulator if this procedure is not followed.
13. Never allow problems or lack of maintenance to go unreported.
14. Read and follow precautions on compressed gas cylinder labels.
15. It is important that you analyze all aspects of your application and review all available information concerning the product or system. Obtain, read and understand the Material Safety Data Sheet (MSDS) for each fluid used in your system.
16. Never use materials for regulators, valves or accessories that are not compatible with the fluids being used.
17. Users must test components for material compatibility with the system operating conditions prior to use in the system.
18. Vent fluids to a safe environment and in an area away from employees. Be sure that venting and disposal methods are in accordance with Federal, State and Local

requirements. Locate and construct vent lines to prevent condensation or gas accumulation. Make sure the vent outlet is not obstructed by rain, snow, ice, vegetation, insects, birds, etc. Do not interconnect vent lines; use separate lines if more than one vent is needed.

19. Do not locate regulators, valves or accessories controlling flammable fluids near open flames or any other source of ignition.
20. Some fluids when burning do not exhibit a visible flame. Use extreme caution when inspecting and/or servicing systems using flammable fluids to avoid death or serious injury to employees. Provide a device to warn employees of these dangerous conditions.
21. Many gases can cause suffocation. Make certain the area is well ventilated. Provide a device to warn employees of lack of Oxygen.
22. Never use oil or grease on these regulators, valves or accessories. Oil and grease are easily ignited and may combine violently with some fluids under pressure.
23. Have emergency equipment in the area if toxic or flammable fluids are used.
24. Upstream filters are recommended for use with all fluids.
25. Do not bleed system by loosening fittings unless specified by Instruction Manual.
26. Prevent icing of the equipment by removing excess moisture from the gas.
27. Always use proper thread lubricants and sealants on tapered pipe threads.

2.2 Installation

⚠ CAUTION

Do not open packaging until ready for installation or in a clean environment. Product is cleaned in accordance with CGA 4.1 and ASTM G93, Verification Type 1, Tests 1 and 2. With periodic verification of cleaning process to MIL-STD-1330D.

⚠ WARNING

Make sure that the components and materials used in the fluid handling system are compatible with the fluid and have the proper pressure rating. Failure to do so can result in death, serious injury and/or property damage.

Inspect the regulator, valve, accessories and assembly for physical damage and contamination. Do not connect the regulator, valve, accessory or assembly if you detect oil, grease or damaged parts. If the regulator, valve, accessory or assembly is damaged, contact your local TESCOM representative to have the regulator cleaned or repaired.

2.3 Repair Service

If a regulator or valve leaks or malfunctions, take it out of service immediately. You must have instructions before doing any maintenance. Do not make any repairs you do not understand. Have qualified personnel to make the repairs. Return any equipment in need of service to your

equipment supplier for evaluation and prompt service. Equipment is restored to the original factory performance specifications, if repairable. There are flat fee repair charges for each standard model. The original equipment warranty applies after a complete overhaul.

⚠ CAUTION

Proper Component Selection

1. Consider the total system design when selecting a component for use in a system.
2. The user is responsible for assuring all safety and warning requirements of the application are met through his/her own analysis and testing.
3. TESCOM may suggest material for use with specific media upon request. Suggestions are based on technical compatibility resources through associations and manufacturers. TESCOM does NOT guarantee materials to be compatible with specific media -- THIS IS THE RESPONSIBILITY OF THE USER!
4. Due to the varying composition, viscosity, corrosiveness and density of chemical fluids, the fluid media and full system must be considered by the user when selecting a product. This is required to ensure regulator performance, user safety, flow capability and system level performance.
5. Component function, adequate ratings, proper installation, operation and maintenance are the responsibilities of the system user.

⚠ WARNING

Do not modify equipment or add attachments not approved by the manufacturer. Failure to do so can result in death, serious injury and/or property damage.

ASSEMBLY/INSTALLATION DRAWINGS AND BILLS OF MATERIAL drawings and parts lists for your product may be obtained by contacting TESCOM. TESCOM will provide these by email, fax or mail. Your local TESCOM representative can provide additional assistance. Be sure to have your complete model number ready.

Section 3: Introduction

TESCOM 56-21XX and 56-22XX Series Chemical injection flow control devices are specifically designed for offshore chemical injection applications. The 56-21XX and 56-22XX Series utilize metering valves which allow for precise control of large flow ranges at pressures up to 15,000 psig / 1034 bar.

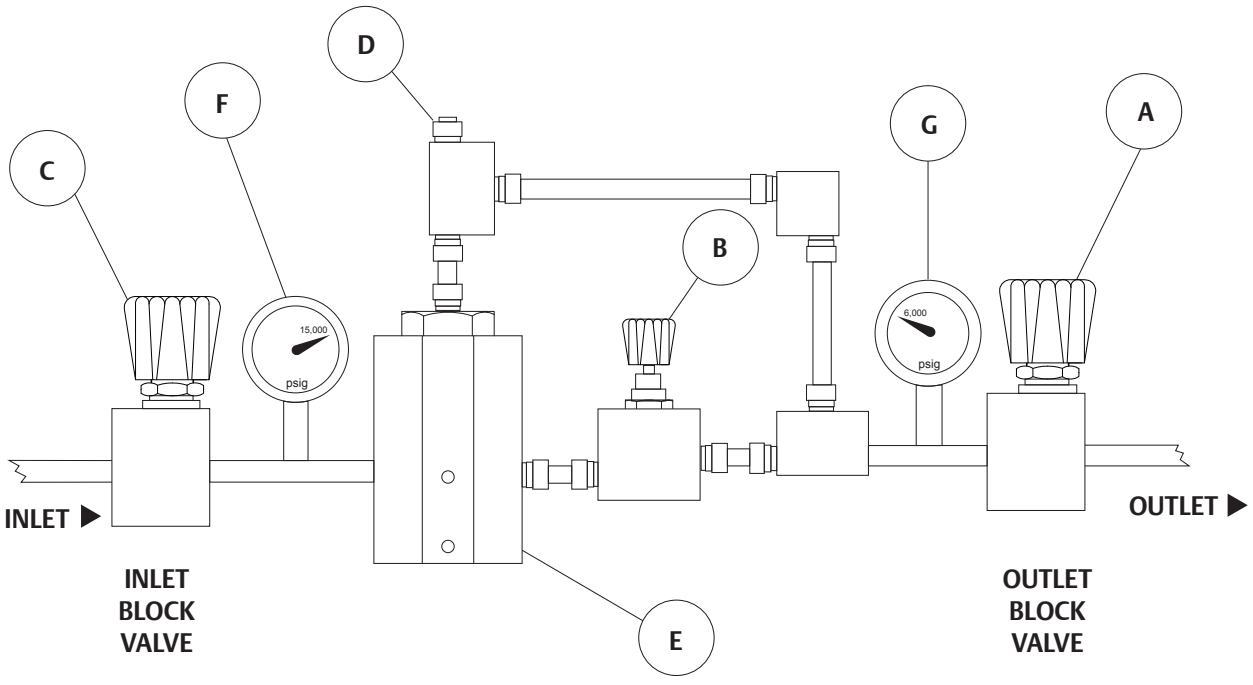
Section 4: Specifications

Maximum Inlet Pressure 56-21XX Series:	15,000 psig / 1034 bar
Maximum Inlet Pressure 56-22XX Series:	10,000 psig / 690 bar
Maximum Outlet Pressure 56-21XX Series:	14,800 psig / 1034 bar
Maximum Outlet Pressure 56-22XX Series:	4000 psig / 276 bar
Operating Temperature (All):	0 to 165°F / -18 to 73°C
Weight 56-21XX Series:	Approximately 18.26 lbs / 8.28 kg
Weight 56-22XX Series:	Approximately 9.09 lbs / 4.12 kg

Section 5: Drawings

5.1 Installation Diagram for 56-21XX Series

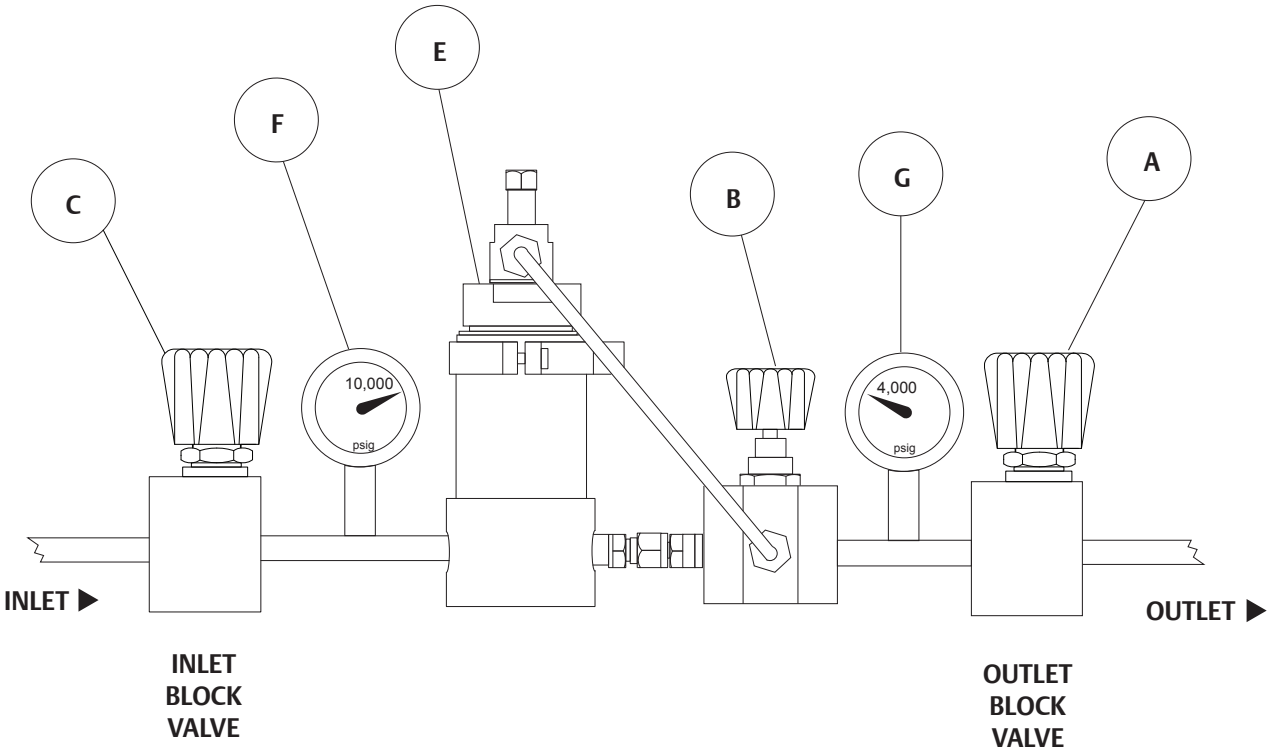
Letter call-outs are referenced in the Installation and Start-Up Procedures section of this manual.



56-21XX Series Assembly

5.2 Installation Diagram for 56-22XX Series

Letter call-outs are referenced in the Installation and Start-Up Procedures section of this manual.



56-22XX Series Assembly

Section 6: Installation and Start-Up Procedures

⚠ WARNING

Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion, fire and/or chemical contamination causing property damage and personal injury or death.

TESCOM regulators must be installed, operated and maintained in accordance with federal, state and local codes, rules and regulations.

If the regulator vents gas or a leak develops in the system, service to the unit may be required. Failure to correct trouble could result in a hazardous condition.

Installation, operation and maintenance procedures performed by unqualified personnel may result in improper adjustment and unsafe operation. Either condition may result in equipment damage or personal injury. Call a qualified personnel when installing, operating, and maintaining the 56-21XX and 56-22XX Series regulator.

⚠ WARNING

Personal injury, equipment damage or leakage due to escaping fluid may result if needle valves are used to isolate the pressure reducing regulator. It is strongly recommended that block valves be used to properly isolate the regulator from system.

Personal injury, equipment damage or leakage due to escaping accumulated fluid or bursting of pressure-containing parts may result if this regulator is:

- Over-pressured
- Used with incompatible process fluid
- Installed where service conditions could exceed the limits given in the specifications section and on the appropriate nameplate
- Where conditions exceed any ratings of adjacent piping or piping connections. To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices to prevent service conditions from exceeding those limits

Confirm with gauges that there is zero pressure in the system prior to installation:

Note: Refer to the Installation Diagram for additional information.

1. Re-tighten fittings on assembly as they may have loosened during shipping.
2. Rotate valve hand knob (B) counterclockwise until it stops turning. This will close the valve which will prevent pressurized flow through the regulator/valve assembly.
3. Close the inlet (C) and outlet (A) block and bleed valves surrounding the regulator and pressurize the supply side or inlet side of the system.
4. Install the regulator/valve assembly with the inlet port of regulator (E) connected to the supply or inlet piping of the system and connect the outlet port to the downstream piping in the system using plumbing supplier specified torque values.
5. Slowly open the inlet block valve (C) to apply pressure to the inlet of the 56-2XXX Series assembly regulator (E).

6. Verify the regulator's inlet pressure (F).
7. Slowly open the Valve hand knob (B) to apply pressure to the regulator/valve assembly.
8. For 56-21XX Series only, slowly turn the bleed plug (D) approximately 1/4 turn counterclockwise to vent any entrapped air. Tightly close plug after all air is evacuated.
9. Slowly open the outlet block valve (A) to allow pressurized flow through the system.
10. Verify the regulator/valve assembly's outlet pressure (G) to determine if there is any leakage. If there is any leakage, remove the 56-2XXX Series assembly for inspection and repair. If no leakage occurs move on to Step 11.
11. Check the Bleed Plug (D) for any sign of liquid leakage. If leakage occurs remove 56 Series regulator for inspection and repair. If no leakage occurs move on to step 12.
12. Verify and record flow rate and pressure over time.
13. Adjust valve (B) by turning the hand knob to the desired orifice size until desired flow rate is achieved.
14. Following any adjustment to valve (B), verify and record flow rate and pressure over time.

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